



Unstable Equity: Combining Banking with Private Equity Investing

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COMBINING BANKING WITH PRIVATE EQUITY INVESTING

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Bank-affiliated private equity groups account for 30% of all private equity investments. Their market share is highest during peaks of the private equity market, when the parent banks arrange more debt financing for in-house transactions yet have the lowest exposure to debt. Using financing terms and ex-post performance, we show that overall banks do not make superior equity investments to those of standalone private equity groups. Instead, they appear to expand their private equity engagement to take advantage of the credit market booms while capturing private benefits from cross-selling of other banking services.

Keywords: Private equity; Banks; Credit cycles

JEL codes: G20, G21, G24

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Banks' involvement in private equity is an important economic phenomenon: Between 1983 and 2009, 30% of all U.S. private equity investments (representing over \$700 billion of transaction value) were sponsored by the private equity arm of a large bank (Figure 1). In the aftermath of the 2008 financial crisis, the passing of the "Volcker Rule" as part of the Dodd-Frank Act required banks to limit their exposure to private equity and hedge funds to no more than three percent of their Tier 1 capital. Although this rule called for substantial cutbacks in banks' involvement in principal investing activities including private equity, very little is known about banks' engagement in private equity and the pros and cons of combining private equity with banking. We seek to address this gap.

[FIGURE 1]

Why do banks invest so actively in private equity? What positive and negative effects might these activities have on the economy? To be clear, banks has two ways to invest in private equity deals: they can act as the equity investor, or, as both the equity investor *and* the debt financier. In this paper, we refer to the first type of investments as "bank-affiliated" deals, and the second type as "parent-financed" deals. As such, bank involvement in private equity is a complex phenomenon that crosses a number of theories. Both types of investments can be motivated by good or bad reasons.

For bank-affiliated private equity deals, a worrisome view—often invoked to justify the Volcker Rule—is that equity investments by banks could reflect bank managers' incentives to grow revenues and maximize volatility, which can create systemic risks. Such incentives might arise because banks' own equity values increase with volatility, and large banks enjoy implicit bail-out guarantees.¹

On the other hand, there are also positive economic arguments for banks' equity investments in firms. Through the screening of loans and monitoring, banks obtain private information about their clients

¹ Expressing this view, President Barack Obama said on January 21, 2010, "Our government provides deposit insurance and other safeguards and guarantees to firms that operate banks. [...] When banks benefit from the safety net that taxpayers provide—which includes lower-cost capital—it is not appropriate for them to turn around and use that cheap money to trade for profit. [...] The fact is, these kinds of trading operations can create enormous and costly risks, endangering the entire bank if things go wrong. We simply cannot accept a system in which hedge funds or private equity firms inside banks can place huge, risky bets that are subsidized by taxpayers and that could pose a conflict of interest." <http://www.whitehouse.gov/the-press-office/remarks-president-financial-reform>.

which can be valuable in other transactions. This informational advantage leads to the certification effect in cases of repeated lending (James (1987)) and securities underwriting (James and Weir (1990); Puri (1996)). Likewise, banks could use information generated during past banking relationships to make private equity investment decisions. Not only does the bank enjoy information synergies from combining different activities, but also there is a positive externality: The bank's engagement as a private equity investor could carry a positive signal about the quality of the deal to outside (debt) investors, resulting in better financing terms. This type of certification is akin to the arguments made for universal banks that combine commercial banking (lending) and investment banking (underwriting) in the debate about the Glass-Steagall Act (Kroszner and Rajan (1994); Puri (1996)).

A third reason that may motivate banks to make private equity investments in firms is cross-selling, a common phenomenon for large banks. Drucker and Puri (2005) provide evidence that banks cross-sell investment banking services to commercial banking clients. Hellmann, et al. (2008) document that banks cross-sell services to firms that receive their venture funding. By investing equity in a target firm, a bank stands to gain from future banking revenues from that company. Cross-selling is rational for banks and reflects efficiencies of a "one-stop-shop" of banking services, but there might be a concern if cross-selling gives banks incentives to make poor investments and take on excess risks.

Approximately one-third of the bank-affiliated private equity deals have the loan backing the transaction arranged by the parent bank (Figure 1). The parent-financing arrangement gives banks *additional* incentives to get involved in a private equity deal. It is worth noting that parent-financing is a unique bank-related phenomenon: Standard private equity groups by definition can only act as the equity investor but not the debt financier.

Parent-financing might concern policymakers if banks use their position as intermediaries in the debt market to "originate and distribute" the debt of their own risky deals during the peak of the market, amplifying the cyclicity of investments and the credit market. Since the mid-1980s, debt financing for private equity deals has primarily come in the form of syndicated loans. Unlike traditional bank loans, syndicated loans are originated by banks but funded by a syndicate of lenders; banks retain only a fraction

of them. Shleifer and Vishny (2010) show that if outside debt investors misprice securities and banks retain only a fraction of the loan while receiving fees for originating the loan, rational banks will use all of their capital to fund more risky projects when the credit market is booming, amplifying the credit cycle.

Although cyclicalities have been well-documented in private equity investing in general (Kaplan and Stein (1993); Gompers and Lerner (2000); Kaplan and Strömberg (2009)), banks' financing of in-house deals may be even more cyclical for two reasons. First, while regular private equity groups, such as Blackstone and KKR, also want to do more deals in the credit market booms, banks may have stronger incentives and more capacity to finance in-house deals because these deals provide more cross-selling opportunities to the banks. Cross-selling increases fees captured by the bank, while loan syndication means that the bulk of the cost (capital requirements and risk) is distributed to outside investors.² Second, if the heightened private equity deal-making during credit booms is viewed as a form of market timing, then such timing may be easier with in-house deals. Highly leveraged loans—such as those backing leveraged buyouts (LBOs)—are typically syndicated to institutional investors, including mutual funds, hedge funds, and special purpose vehicles such as collateralized loan obligations (CLOs). Loan syndication can be a time-consuming and uncertain process (Ivashina and Sun (2011)),³ but banks are specialists in this process: Even the largest private equity groups rely on banks to line up financing, attesting to banks' expertise. When banks have in-house private equity operations, information sharing across bank divisions allows the banks to fully utilize their advantage in matching credit demand with supply.

Banks, therefore, may have both the motive and the ability to expand their private equity activity in credit booms. Indeed, Figure 1 suggests that banks' involvement in private equity is more cyclical than

² This point is formalized by Shleifer and Vishny (2010). In their model higher fee income for the originating banks reduces incentives to smooth lending over time, which increases cyclicalities.

³ Several institutional factors contribute to the complexity of loan syndication. An important class of syndicate participants is CLOs, and their demand for loans was an important driver behind the 2004-2007 leveraged-buyout boom (Shivdasani and Wang (2011)). However, CLOs are inflexible investment vehicles that at all points must satisfy a set of investment restrictions to maintain the rating structure. Together with other frictions, this contributes to the volatility of CLOs' demand for loans, making the syndication process uncertain. For detailed discussions of the syndication process, see Ivashina and Sun (2011).

the overall private equity market: their share of private equity market is high when overall private-equity activity is high (indicated by the shaded area), and the fraction of equity deals with parent-financing moves up and down with banks' share of the overall private equity market.

But parent-financing of in-house private equity deals may have positive effects as well. First, by doing so, the bank would be exposed to both the equity and the debt of the target (at least partially), resulting in a better alignment of equity and debt investors' interests, reducing agency problems (Jiang, et al. (2010)). Second, just as relationship lenders play a certification role when they act as underwriters in the corporate bond market (Puri (1996)), the parent bank's decision to lead a loan syndicate—in addition to making an equity investment—can convey a good signal to external syndicate participants and result in better loan terms. This type of *lender* certification is especially credible if the bank has past relationships with the firm (a proxy for bank information), and if the bank is reputable in the LBO lending market.

To recap, banks have two ways to get involved with private equity investments: as the equity investor (bank-affiliated deals), or as both the equity investor and the lender (parent-financed deals). The hypotheses regarding the pros and cons of banks' involvement in private equity are (starting with the “positive” views): (i) certification effects (as equity investors in the case of bank-affiliated deals, plus as lenders for the sub-sample of parent-financed deals); (ii) reducing debt-equity conflicts (in the case of parent-financed deals); (iii) cross-selling, (iv) maximization of volatility; and (v) a Shleifer and Vishny (2010) type of timing of the credit markets (in the case of parent-financed deals); . These hypotheses are not mutually exclusive.

The positive views predict that, due to the certification effect and reduced agency conflicts, all bank-affiliated deals (including parent-financed), as compared to stand-alone private equity deals, should:

- involve higher-quality targets,
- be financed at better terms to reflect higher quality,
- and experience more favorable ex-post outcomes.

Under the negative views, target quality, financing terms, and ex-post outcomes should be the same or worse for bank-affiliated and parent-financed deals. In addition, if banks take advantage of credit

market conditions in financing their own equity deals, then parent-financed deals in particular should receive advantageous financing terms and this financing advantage should be concentrated in credit market peaks, even if these deals do not exhibit better ex-post performance.

Our evidence on balance is more consistent with the negative views and, in particular, the concerns raised by Shleifer and Vishny (2010). Comparing bank-affiliated deals to stand-alone deals, we find that they have worse financing terms. They also have worse ex-post outcomes (more debt downgrades and fewer upgrades), especially for deals consummated during the peaks of the credit market cycle. Thus, this underperformance holds in excess of the overall cyclical underperformance documented for private equity deals in general (Kaplan and Stein (1993); Kaplan and Schoar (2005)). This evidence indicates that banks are not superior equity investors than regular private equity groups, and their equity investments (alone) do not provide certification for the quality of the deals.

Comparing parent-financed deals with stand-alone deals, we find strong evidence that they enjoy significantly better financing terms, even though they do not exhibit better ex ante characteristics and ex post outcomes. All else equal, parent financing increases the loan amount by \$577 million, increases the maturity by 3.9 years, and reduces the spread by 34 basis points. These effects are economically large considering that the average loan size is \$613 million, the average maturity is 6.2 years, and the average spread is 318 basis points in our sample. Consistent with the notion that banks take advantage of loose credit market conditions in the financing of in-house deals, the superior non-pricing terms of parent-financed deals are concentrated entirely in credit market peaks. This result is robust to the use of the inflow of funds to CLOs (an important funding source for private equity deals and arguably an exogenous source of variation in credit supply) as an instrument for the credit market conditions. Examining banks syndication behavior, we find that these are also the time periods that banks retain the lowest fractions of the loans backing the investments, with the rest syndicated to other investors. The concentration of superior terms in peak periods when banks retain the least of the loans suggests that the superior financing terms result from favorable credit supply conditions, rather than stronger certification. Finally, we also find that bank involvement in private equity—especially their role as lenders—generates significant

cross-selling opportunities for banks. Although cross-selling does not explain the financing patterns by itself, it offers a rationale for banks' pro-cyclical expansion in private equity by enabling them to capture more future revenues (while their risk exposures can be syndicated out).

While we also find evidence that bank certification as lenders are associated with better financing terms, the cyclicity of parent-financing terms is unexplained by these effects. The time-varying component of our findings—the cyclical variation in financing terms and the performance of the deals (as compared to stand-alone private equity deals)—is important for interpreting our results. For example, while the certification hypotheses may also have time-varying predictions, they are of the wrong sign. If banks' monitoring of management and incentive-alignment are enhanced when they invest in and finance more deals, we should observe better, not worse, outcomes among bank-affiliated and parent-financed deals consummated during peaks. But this is not the case. Thus, the collective set of evidence on parent-financed deals indicates that market-timing (Shleifer and Vishny (2010)), as opposed to information about the borrower's quality, is the most consistent explanation for banks' cyclical expansion in private equity.⁴

The debate about the Volcker Rule harkens back to many of the same issues raised in earlier discussions about the Glass-Steagall Act of 1933. Does combining different activities within the same bank benefit from banks' role as information intermediaries? Or does it create conflicts of interest that benefit the banks at the expense of others? While the literature has provided ample evidence on the Glass-Steagall Act (Kroszner and Rajan (1994); Puri (1996); Gande, et al. (1997); Drucker and Puri (2005)), it has been silent on the factors influencing the desirability of combining lending and private equity investing. By providing the first set of evidence on the topic, our paper takes a step towards filling a gap in the literature.

⁴ It is also important to view the different pieces of the evidence jointly. Certification can be fully consistent with cyclical advantages in financing terms. But together with the fact that these better loan terms are not matched by better outcomes in peak years, and that they are obtained when banks retain the lowest fractions of the loans (syndicating most out), they are more consistent with banks' timing of credit market conditions in the financing of in-house equity investments than with certification.

We interpret the collective set of time-series patterns as more consistent with the negative views of the banks' involvement in private equity than the positive ones. But we also show that banks have a certification role as lenders (even though we argue that it does not explain the cyclical patterns that we document.) The co-existence of banks' timing of the credit market and certification highlights the complexity in drawing policy implications. The evidence of value-enhancing certification points to the fact that bluntly curbing the banks' involvement in private equity may not be a first-best solution. More broadly, that assessment of the Volcker Rule should also factor in the externalities (positive and negative) associated with bank involvement, and the extent to which bank-affiliated private equity deals are substitutes for or complements to deals that otherwise would be done by stand-alone private equity groups. As ours is the first set of empirical evidence regarding the effects of combining banking with private equity investing, we defer the optimal regulatory design and other broader issues to future research.

1. Banks and Private Equity

Private equity firms use privately raised capital to buy stakes in companies and hope to realize a profit when they sell (or exit) these investments. The equity capital of private equity funds is raised from limited partners (LPs); investment decisions are made by general partners (GPs). In the case of a bank-affiliated private equity fund, the parent bank often acts as an anchor LP to the fund, contributing as much as 50% of the fund's equity (Hardymon, Lerner, and Leamon (2004)).

In addition to equity, a typical private equity transaction includes several layers of debt. Over the past two decades, debt represented on average 60-70% of the capital structure in leveraged buyouts and reached as high as 80% in 2006 and early 2007. Since the mid-1980s, syndicated bank debt has been an important source of funding in this market. Although the loan issued in conjunction with a transaction typically has recourse only to the target (portfolio firm), the private equity firm is referred to as the "financial sponsor". Figure 2, Panel A illustrates a typical transaction done by a stand-alone (i.e., non-bank-affiliated) private equity group. The private equity sponsor (Blackstone, in this case) invests in the

equity stake of the target company; the bank (Citi in this case) arranges the debt used in the transaction. In contrast, Panel B of Figure 2 illustrates a bank-affiliated transaction. Here, the private equity sponsor is Goldman Sachs Capital, a subsidiary of Goldman Sachs. Thus, the difference between a bank-affiliated private equity deal and a stand-alone deal is whether the private equity sponsor has a bank (holding company) as a parent. In our analysis, we use a zero-one variable *BANK AFFILIATED* to indicate this difference. Our measure of affiliation is independent of the size of the parent bank's equity contribution as a LP.

As noted above, the parent bank can act as a lead bank in the lending syndicate.⁵ Panel C of Figure 2 illustrates this scenario. Here, the private equity sponsor is Goldman Sachs Capital, a subsidiary of Goldman Sachs. But in addition, Goldman Sachs (the parent bank) leads the loan syndicate. We use a zero-one dummy *PARENT FINANCED* to indicate these deals. Of the bank-affiliated deals in our sample, roughly one-third is parent financed. Notice that Panels A, B, and C of Figure 2 illustrate the three possible categories of transactions; by definition, it is not possible for a stand-alone private equity deal to be parent financed.

[FIGURE 2]

In general, bank-affiliated transactions are similar to stand-alone transactions in many respects, such as the target industry, deal characteristics, and the investors' evaluation processes. We provide evidence on this similarity in the next section. In addition, we conducted interviews with a number of senior private equity professionals from four different firms who have worked in bank-affiliated as well as stand-alone private equity firms. The consensus emerging from these interviews is that the transactions undertaken by bank-affiliated and large independent private equity groups are similar: the target industry, characteristics, and the investors' evaluation processes do not differ materially. In fact, these investors

⁵ Loans in our sample are syndicated. To capture the leading role a bank plays in the lending syndicate, we count a bank as a lead bank if it is either the lead arranger or co-arranger for the loan. In only one case the parent bank acted as a "participant" on the lending syndicate. We did not count this case as parent-financed deal given that "participant" role is typically not associated with a major funding commitment.

often compete for the same deal. This alleviates the concern that bank-affiliated and stand-alone deals are not comparable due to selection bias.

Although it is unlikely that the effects identified in this paper are driven by the GP/LP structure of the bank-affiliated firms, it is worth noting that GP compensation in bank-affiliated funds is similar to that in stand-alone funds. As an example, Hardyman, Lerner, and Leamon (2004) provide a detailed description of the incentives for Montagu Private Equity while it was affiliated with HSBC. They indicate that, while bonuses to staff (assistants and junior associates) in bank-affiliated funds were paid by the parent, GP compensation was from fees and carry, just as in stand-alone funds; the main difference being that bank-affiliated GPs received only a portion of the total carry (87.5% for Montagu), with the rest going to the parent. Importantly, just as in stand-alone funds, compensation of managing partners for bank-affiliated private equity firms depends on the performance of the fund (fees and carry), and not on the performance of the parent bank.

2. Data and Descriptive Statistics

We compile a sample of U.S. private equity transactions between 1983 and 2009 from Standard and Poor's Capital IQ. Information on borrowing terms for a subset of the deals is collected from Reuters' LPC DealScan loan database (DealScan). To examine investment outcomes, we further collect loan outcomes and (equity) exit information from various sources.

Our sample includes leveraged buyouts (LBOs) and growth investments, but excludes venture capital and distressed investments. Capital IQ has tracked private equity deals on a world-wide basis since 1999. Through extensive research, it attempts to "back fill" information about investments before 1999.⁶ Strömberg (2008) compares the Capital IQ LBO data during the 1980s with the samples in older LBO studies from other sources and estimates the Capital IQ coverage to be between 70% and 85% for this period. Due to the back filling, the Capital IQ sample is likely to be skewed towards larger deals before

⁶ Most data services tracking private equity investments were not established until the late 1990s. The most comprehensive exception, SDC VentureXpert, was primarily focused on capturing venture capital investments (rather than private equity transactions) until the mid-1990s.

1999. This sampling feature creates a bias against finding a difference between bank-affiliated and stand-alone deals because larger deals generally have better access to financing; the identity of the sponsor plays a smaller role. Thus the differences we document below are unlikely to be due to sampling biases.

DealScan primarily covers syndicated loans. Our dataset covers the period from 1988 through the end of 2008 (a period with two boom-bust cycles). We collect information on the borrower's name, lenders' names, private equity investor's name, loan type, loan size, loan maturity, and loan spread paid over the London Inter-Bank Offered Rate (LIBOR). For a sub-sample of deals, we also have information on the maximum debt as a multiple of EBITDA allowed under the loan contract, an important financial covenant. We consolidate the information at the loan level. For a given transaction, we look at the terms on the first-lien term loan facilities. All first-lien tranches (including Term loan A and Term loan B) share seniority, collateral, and covenant structure, so the spread on all the senior tranches is typically the same. Consistent with the literature (e.g., Demiroglu and James (2010), and Ivashina and Kovner (2011)), we look at the “all-in-drawn” spread, which includes fees paid to the lending syndicate (such as an annual fee) and excludes upfront fees (typically a flat 2% rate) paid directly to the lead arranger. We then match the DealScan data with the Capital IQ transactions data by borrower name, private equity investor name, and time of the transaction. Finally, in the instances where DealScan has multiple listings for a transaction, we select the first chronological loan associated with that transaction, excluding bridge loans and follow-on transactions or refinancings. We do this because our focus is the financing conditions at the time of the deal closing, rather than the dynamics of debt renegotiation.

We are able to match 2,105 deals from Capital IQ with financing information from DealScan. The match is imperfect because not all transactions are backed by large—and, therefore, syndicated—loans, which is the primary focus of DealScan.⁷ Overall, the matched sample is biased toward large

⁷ The DealScan data are collected from Reuters contributors and is primarily used by market participants as a benchmark for loan terms and for construction of league tables. If the loan is not syndicated, it is unlikely to be included. Because LBOs have other sources of financing in addition to the syndicated loan market, the loan amounts in the DealScan data are lower bounds of total deal leverages. However this effect should be symmetric for all deals, and thus does not introduce bias to our study.

transactions, but there is no reason to believe that this affects the bank-affiliated and stand-alone samples differently. The sample size and deal characteristics in our merged sample are comparable to other studies that rely on the DealScan data (Axelson, et al. (2008); Ivashina and Kovner (2011)).

Table 1 reports investment activities of all 14 bank-affiliated groups and the top 15 stand-alone groups. The ranking is based on total dollar amount of investments, using the larger Capital IQ sample (before matching with DealScan). Bank-affiliated groups are (surprisingly) large players in the private equity market: Between 1983 and 2009, they were involved in 2,759 deals totaling over \$730 billion in transaction value, while stand-alone groups took part in 7,247 deals totaling \$1,849 billion in transaction value. By either measure, bank-affiliated groups account for nearly 30% of the overall private equity market.⁸ This percentage is strikingly similar to that reported by Lopez-de-Silanes, et al. (2011), where the authors find that roughly one-third of the investments in their *global* private equity dataset are done by bank-affiliated private equity groups (subsidiaries of banking and finance companies). The consistency in this percentage between two separate samples indicates that banks' significant involvement in private equity is an important aspect of private equity investing, although little understood to date.

Activity in both the bank-affiliated and stand-alone samples is concentrated. In the bank-affiliated sample, Goldman Sachs Capital Partners alone accounts for 36% of the total transaction values, and the top five groups account for 83% of the total. In the stand-alone sample, the top group KKR accounts for 15% of the total transaction values, and the top five groups account for over half.

[TABLE 1]

Table 2 reports transaction and target characteristics of the overall sample, as well as the stand-alone, bank-affiliated, and parent-financed sub-samples. We note that bank-affiliated deals are similar to stand-alone deals along most dimensions. They are similar in target size (measured either by total assets or total sales), capital structure (Debt/Assets, Debt/EBITDA, and Cash/Assets ratios), and operating

⁸ In this set of calculations, each sponsor gets full credit for a deal if multiple sponsors are involved. In separate (unreported) calculations where we only count deals with sole sponsors, we find that affiliated groups account for 30.55% of all deals and 29.82% of total transaction value.

performance (EBITDA/Assets and Net Income/Sales ratios). They are also similar in transaction characteristics, such as transaction size and the portion of cash used in payments. The only notable difference is that bank-affiliated deals seem to be done at lower valuations (EV/EBITDA and Equity/Net Income ratios). In unreported analysis, we also find that the industry distributions of the two samples are similar. These comparisons confirm the view heard from practitioners that bank-affiliated deals are generally not very different from stand-alone deals, and they also alleviate sample-selection concerns.

Parent-financed deals stand out from the rest of the sample. They are significantly larger (in both transaction size and firm size), tend to be less-leveraged prior to the transaction (lower Debt/Asset ratio), have less liquidity on the balance sheet (lower Cash/Assets ratio), and tend to be transacted at higher EV/EBITDA ratios than stand-alone deals. These patterns suggest that banks take on the financing of large in-house deals. Despite their size, the statistics suggest that they tend to be financed at better terms.⁹ We analyze banks' involvement in private equity investing and the financing of the deals more rigorously in the next section.

[TABLE 2]

3. Results

3.1 Bank affiliation and parent financing

Table 3 examines the determinants of bank-affiliated deals (*BANK AFFILIATED*) and parent-financed deals (*PARENT FINANCED*) in a multinomial logit setting. The omitted category is stand-alone deals; thus, these regressions estimate the odds that a deal will be bank-affiliated only or also parent-financed, relative to this base case.¹⁰ In light of the hypotheses discussed in the Introduction, we are especially

⁹ Our finding that parent-financed deals enjoy better financing terms and are transacted at higher EV/EBITDA multiples is consistent with Axelson et al. (2012), which documents that investors pay higher EV/EBITDA multiples for deals when debt is cheap.

¹⁰ The use of a multinomial logit regression assumes that the bank decides simultaneously whether to be a private equity sponsor of a deal and whether to also be a syndicate leader. We thank an anonymous referee for this suggestion. In a previous draft, we estimated separate probit regressions, which assume that these two decisions are made separately. Although that analysis operates under different assumptions, the main qualitative conclusion is similar to that reported here.

interested in how credit-market conditions influence banks' involvement in private equity. The negative views—maximization of growth and volatility (in the case of bank-affiliation), and market-timing (in the case of parent-financing)—suggest that banks will be more involved in private equity deals during peaks of the credit market.

We use two measures of market conditions. The first is an indicator variable *PEAK YEAR* which equals 1 for 1985-1989, 1998-2000, and 2005-2007, corresponding to expansion periods of the private equity market.¹¹ As a second, continuous measure of the credit-market conditions, we use the quarterly CLO fund flow, scaled by total term loan (as opposed to revolving lines) issuance (*CLO FUND FLOW*). The rationale for this measure is the following. Since the late 1990s, CLOs are the largest investor group in the primary leveraged credit market.¹² Shivdasani and Wang (2011) argue that supply of funds from CLOs was the main driver behind the recent LBO boom. Because CLOs use term loans as the primary underlying collateral, the ratio of CLO flow relative to total loan issuance is a proxy for the imbalance between credit supply from CLOs and credit demand by borrowers; an increase in this ratio indicates a positive shock to the institutional fund supply in the leveraged credit market. Since most of the capital raised by CLOs is invested in loans by definition, this is a particularly good proxy for the fluctuations in credit supply. In addition, *aggregate* trends in CLO fund flow and total loan issuance are likely to be exogenous to any particular transaction or any particular bank. The drawback is that we have these data only for the period from 2001 to 2008; thus our evidence using this proxy is based on a smaller sample.¹³

¹¹ We use annual private equity investments data from SDC. A year is considered a peak year if it saw a large amount of total investment, and represents a positive year-on-year growth in total investments compared to the last year. The cutoff for a “large” amount of total investments is \$3 billion for the 80’s; \$30 billion for the 90’s (a ten-fold increase compared to the earlier decade), and \$45 billion for the current decade (a 50% increase from the earlier decade). These cutoffs are chosen by examining the trend of investments in adjacent years.

¹² According to Standard & Poor’s, between 2000 and 2006 CLOs represented 65% of the institutional investors’ buying of syndicated leveraged loans on the primary market.

¹³ We also examined an alternative market condition measure: the credit tightening measure based on Senior Loan Officer Opinion Survey (www.federalreserve.gov/boarddocs/snloansurvey/). Results (unreported) using this alternative measure are qualitatively similar to those reported in this paper. The results using the survey data have weaker statistical power, which is not surprising given that CLO fund flow directly influences LBO financing whereas the survey data reflects overall bank lending conditions.

Other explanatory variables include the number of investors (some deals involve multiple equity sponsors, i.e., “club deals”), the credit quality of the target (investment-grade), the (log of) transaction value, a measure of valuation (the EV/EBITDA ratio), the (log of) target assets, and a measure of target operations (EBITDA/sales).

Panel A reports our baseline results. We find that bank affiliation (relative to stand-alone deals) is not strongly affected by the credit-market condition variables—*PEAK YEAR* and *CLO FUND FLOW*. We also note that the independent variables are generally insignificant in explaining bank-affiliation relative to stand-alone deals, again suggesting similarities between the two samples. However, parent-financing is strongly related to credit-market conditions: Both the *PEAK YEAR* and *CLO FUND FLOW* variables significantly predict *PARENT FINANCED*. Another salient observation is that parent financing is strongly driven by the size of the deal. The (log of) transaction size is a significant predictor for *PARENT FINANCED* in both specifications; the number of investors (indicating club deals, which are almost by definition large) is also significant.

In Panel B, we add a variable *TARGET-BANK RELATIONSHIP* and its interaction with the credit-market condition variables to examine the role played by bank information, and whether the effects of the credit-market condition variables are driven by this information (the interaction term). Specifically, following Ivashina and Kovner (2011), for a given transaction, *TARGET-BANK RELATIONSHIP* is the dollar value of loans in the previous five years arranged by the same lead bank for the target divided by the total dollar value of all loans received by the target. Thus, it measures the historical importance of the bank as a financier to the target. We are interested in this variable because according to the positive view of bank certification, banks may use information acquired from past interactions about the target to make (better) equity investment and financing decisions.

We find that bank information, proxied for by a past relationship between the target and the bank, has no explanatory power for either bank affiliation or parent financing. In contrast, *PEAK YEAR* and *CLO FUND FLOW* remain strong predictors of parent financing.

[TABLE 3]

In summary, the result that stands out from this analysis is that parent financing is driven by credit market cyclicalities and transaction size: it is more likely to occur for large deals during the peaks of the market. On the other hand, bank information (proxied for by past target-bank interactions) does not seem significant in explaining banks' involvement in private equity transactions.

3.2 Financing terms

Table 4 reports regression analyses of four financing term variables at the time of loan origination: total loan amount, maturity, total spread paid over LIBOR, and the maximum debt as a multiple of EBITDA allowed by the covenants.¹⁴ All else equal, larger loan amounts indicate more availability of financing, an important factor for private equity deals. Lower spreads indicate a lower cost of capital. Cotter and Peck (2001) argue that shorter maturity, by placing higher payment burdens on the firm, is a substitute for more stringent covenants. Thus longer maturity indicates looser, or more favorable, non-pricing terms for the borrower. Finally, a higher maximum debt-to-EBITDA ratio indicates looser covenant terms because it provides more financial flexibility to the firm.

The main explanatory variables are the indicator variable for bank-affiliated deals (*BANK AFFILIATED*) and parent-financed deals (*PARENT FINANCED*). The omitted category in this regression is stand-alone deals.

Control variables include an indicator for a mixed type deal (i.e., a “club deal” backed by at least one bank-affiliated private equity group and one stand-alone group), the credit rating of the deal, and deal and firm characteristics relevant for loan pricing, such as the (log of) transaction value, the ratio of the target firm's enterprise value to EBITDA, firm size (measured as the log of the target's assets), and the ratio of the firm's EBITDA to sales. For firms without complete financial data, we include a dummy, thus

¹⁴ Following Ivashina and Kovner (2011), we focus on the Maximum Debt-to-EBITDA covenant. They identify this particular covenant as the most important in the context of LBOs. While ideally one would like to focus on the degree to which the financial covenants are binding, this is difficult to do in the context of the LBOs due to the private nature of the transactions.

allowing for a shift in the intercept for this subgroup. Identification of the coefficients on the financial variables is driven by the subsample with the available data. We also include sector and year fixed effects.

[TABLE 4]

Table 4 indicates that, in general, bank-affiliated deals have slightly worse financing terms compared to stand-alone deals. Loan amount is smaller (though insignificant), loan maturities are shorter, and spreads are higher (significant at 10%). The parent-financed deals, in contrast, enjoy significantly better financing. Parent financing increases the loan amount by \$577 million, increases the maturity by 3.9 years, and reduces the spread by 34 basis points. These effects are economically large considering that the average loan size is \$613 million, the average maturity is 6.2 years, and the average spread is 318 basis points in our sample. The effect on the maximum Debt/EBITDA covenant is insignificant, possibly because of the small sample for this data item, but the result still indicates that parent-financed deals enjoy higher maximum Debt/EBITDA ratios.

In summary, bank-affiliated deals are financed at slightly worse terms compared to stand-alone deals, but parent-financed deals enjoy significantly better terms. Earlier literature indicates that private equity groups have certification effects (e.g., Cao and Lerner (2009), Demiroglu and James (2010)). If such effects are reflected in financing terms, the worse terms on bank-affiliated deals suggest that the market does not perceive bank-affiliated groups to make superior investments compared to stand-alone groups, despite the possibility of useful information flows from other bank divisions. This is inconsistent with bank-affiliated groups' certification role as *equity investors*.¹⁵

The superior financing terms associated with parent financing, on the other hand, can still be consistent with both the positive views and the negative views. The positive views contain two main elements. The first is banks' certification role as *debt financiers*: parent banks' decision to lead the loan syndicate can be a positive signal to other debt investors. The second is that banks' exposure to debt in

¹⁵ Additional direct evidence on bank-affiliated groups' certification as equity investors includes ex post outcome information, which we present below. Another channel of equity-investor certification is the investors' reputation in the private equity market. Using size and experience as reputation measures (similar to Demiroglu and James (2010)), our main results do not change after controlling for investor reputation (unreported for brevity).

addition to equity alleviates agency conflicts. The negative views suggest that the improved financing terms reflect banks' ability to time the credit market, and it is unrelated to loan quality. We address these hypotheses in the next sections.

3.3 Certification channels

To understand whether the superior financing enjoyed by *parent-financed* deals is due to the bank certification role in the debt market, we directly examine two channels of certification.

The first channel is bank information. Banks acquire information from past interactions and monitoring of firms. If banks rely on this information to lead loan syndicates for high-quality firms, their decision to be a syndicate leader should be a positive signal to external debt investors and can result in better terms. A natural proxy for bank certification would be a measure of past target-bank relationships. For this, we use *TARGET-BANK RELATIONSHIP*, which measures the fraction of the target firm's borrowing in the past five years that comes from the bank. The second channel of certification is bank reputation. If a bank that is reputable in the LBO lending market decides to lead the financing for a deal, the bank's reputation concerns vis-à-vis credit market investors should serve a certification role for the quality of the loan being syndicated. Similar effects have been documented by Fang (2005) for underwriters in the bond underwriting markets. To capture bank reputation in the LBO financing market, we use an indicator for the top five banks in terms of total dollar amount of LBO lending from Shivdasani and Wang (2011).¹⁶

Our empirical strategy for testing each channel is to introduce each proxy for certification into the regression equation and interact it with the *PARENT FINANCED* dummy. If syndicate leaders have a certification role that arises from strong past relationships with the target or from the banks' reputation, then the relationship and reputation variables should predict superior financing terms. Moreover, if the better terms associated with parent financing are due to certification, we should see the interaction

¹⁶ The top five banks are: Citigroup, JP Morgan, Bank of America, Deutsche Bank, and Credit Suisse.

between the certification proxies and parent financing to predict superior terms. Table 5 reports these tests. Panel A examines target-bank relationship, and Panel B examines bank reputation in the LBO lending markets. For brevity, we report key coefficients only; the empirical specifications are otherwise identical to Table 4.

Consistent with prior literature, we find that a stronger target-bank relationship is associated with significantly larger loan amount and lower spreads.¹⁷ This supports a certification function by loan syndicate leaders that have strong relationships with borrowers. However, the superior financing terms associated with parent financing are *not* explained by this channel: the interaction between *PARENT FINANCED* and *TARGET-BANK RELATIONSHIP* is weak or of the wrong sign, while the coefficients on *PARENT FINANCING* hardly change, indicating that the parent-financing effect does not act through the relationship/superior information channel. Similarly, Panel B shows that lead banks' reputation in the LBO financing markets does not explain the superior financing terms enjoyed by parent-financed deals.

Thus, our evidence suggests that, while the bank-firm relationship is a channel of certification and is related to better financing terms, the parent-financing “advantage” in loan terms is not explained by this effect, as it remains large and significant after explicitly controlling for certification channels.

[TABLE 5]

3.4 Cyclicalities of financing terms

To examine the alternative explanation for the superior financing terms associated with parent financing, namely, banks' timing of the credit market, we investigate the cyclicalities of financing terms. The market timing hypothesis maintains that banks time the credit market to finance more in-house deals when credit market conditions are favorable. If this is the case, we expect the superior financing terms associated with parent financing to be concentrated during those periods.¹⁸

¹⁷ In unreported analysis, when we include the target-bank relationship variable alone, i.e., without its interaction term with parent financing, we find that relationship significantly predicts all four financing term variables.

¹⁸ Cyclicalities in financing terms is difficult to reconcile with certification. One way for the certification hypothesis to predict a pro-cyclical improvement in financing terms would be that during peaks of the market, banks finance

Our approach to examining this hypothesis is the same as for the certification hypothesis. We introduce two measures of credit market conditions—the indicator variable *PEAK YEAR* and the continuous measure *CLO FUND FLOW*—and interact them with key explanatory variables. The main inference comes from the interaction between *PARENT FINANCED* and these variables. Because the previous section shows that target-bank relationship is a channel of certification (though it does not explain the parent financing effect), we also include *TARGET-BANK RELATIONSHIP* and its interaction with the credit condition variables to allow for time-varying certification arising from bank information. Results are reported in Table 6.

[TABLE 6]

Panel A shows that the superior financing terms enjoyed by parent-financed deals concentrate in market peaks. The interaction term between *PARENT FINANCED* and *PEAK YEAR* is positive and significant in the loan amount, maturity, and maximum debt-to-EBITDA regressions. Notably, the explanatory power of *PARENT FINANCED* alone disappears, and its effect loads entirely on the interaction term. Loan spreads are no longer significantly reduced by the parent bank’s presence in the lending syndicate: while the coefficients on both *PARENT FINANCED* and its interaction with *PEAK YEAR* are still negative, they are statistically insignificant. Results in Panel B—which uses the ratio of one-quarter lagged CLO fund flow to total term loan issuance (*CLO FUND FLOW*) as the measure for market conditions—are qualitatively identical to Panel A: the effect of parent financing on the ability to borrow more, at longer maturities, and under looser covenants is concentrated in periods when this ratio is high, which indicates times that institutional fund supply to the leveraged credit market is high.¹⁹ Thus, consistent with the market timing hypothesis, we find that the superior financing terms associated with parent financing are concentrated only in credit market peaks.

more in-house deals in which the banks have had strong past relationships with the target firms. However, we have shown in Table IV that this is not the case: Target-bank relationship does not drive parent financing in a pro-cyclical fashion.

¹⁹ In terms of economic magnitudes, our estimates imply that a one standard deviation increase in *CLO FUND FLOW* leads to additional borrowing of \$443 million, a longer maturity by 2 years, and an increase of 0.9 in the maximum Debt/EBITDA ratio allowed, for parent-financed deals compared to stand-alone deals.

One concern is that the *time-varying* pattern in financing terms may be explained by a few banks' dominance in LBO lending and structured financing, rather than by parent financing. The previous section shows that the overall (static) effect of parent financing is not explained by this. However, Shivdasani and Wang (2011) find that banks active in structured credit markets lent more to LBO transactions and priced LBO loans more aggressively than other lenders during the recent LBO boom. To check the possibility that the time-varying pattern in financing terms is driven by a few large banks, we expand the regression by adding banks' rankings in the LBO and structured credit market from Shivdasani and Wang (2011) and the interaction terms with the credit condition variables. The cyclical effect associated with parent financing is hardly changed by the inclusion of these variables (unreported).

Another concern is that the time-varying effect on parent financing may be driven by the size or reputation of private equity sponsors. Demiroglu and James (2010) and Ivashina and Kovner (2011) find that private equity firms that are bigger and more reputable are more active during credit expansions. To control for this, we expand the regression by including private equity firms' size and its interaction with the credit condition variables. While private equity firms' size is related to better terms, the cyclicity associated with parent financing remains unaffected (unreported).²⁰

Overall, we find a robust pattern that transactions are financed at better terms when the financing comes through the parent bank, and this effect is concentrated only during the peaks of the credit market.²¹ This time-varying pattern is not explained by banks' reputation as LBO lenders or as private equity investors, nor is it explained by bank-target relationships, a source of superior information. In other words, there is a cyclical advantage in financing terms related specifically to parent financing. These findings are consistent with the market timing hypothesis but difficult to reconcile with certification

²⁰ We also looked at whether bank-affiliated funds tend to have more partners with financial engineering abilities. Following Acharya et al. (2013), we collected data on partners' backgrounds from Capital IQ. We find that only 14% of the partner's in bank-affiliated funds have operational (non-financial) background, compared to 27% in stand-alone funds. The difference however is statistically and economically small, reflecting 2-3 people, to explain our findings. More broadly, such skill difference cannot explain why only parent-financed deals, and not all bank-affiliated deals, enjoy superior financing terms.

²¹ There is some evidence that the cyclicity of financing terms is stronger in the non-commercial bank sample.

arguments. In the next two subsections, we provide further evidence by examining ex post outcomes and banks' syndication patterns.

3.5 Ex-post outcomes

To distinguish further between the positive and negative views, we examine the outcomes of the loans backing the transactions as well as the equity investments.²² The loan outcomes are particularly relevant for the certification hypotheses not only because they can be juxtaposed with the ex-ante loan terms, but also because certification is an externality of bank information which has impacts on other investors (in this case, debt investors). The loan outcomes data are from Reuters Gold Sheets. We focus on credit upgrades and downgrades subsequent to the original placement. Exit information on the equity investments combines data from Strömberg (2008) and hand-collected information on recent IPOs, bankruptcies, and mergers and acquisitions (M&A) through January 2010 from Capital IQ and SDC Platinum. Table 7 compares outcomes of stand-alone deals, bank-affiliated deals, and parent-financed deals. We present the results for all years, peak years, and non-peak years. Table 8 presents the same results in the regression setting. Each regression incorporates the standard set of controls used throughout the paper.

We find that loans backing bank-affiliated deals are significantly more likely to be downgraded and less likely to be upgraded than stand-alone deals: 23% of loans backing bank-affiliated deals are upgraded and 61% are downgraded, compared to 34% upgrades and 48% downgrades for loans backing stand-alone deals. These differences are significant at the 1% level and concentrated in peak-year deals. On the equity side, the two samples have similar outcomes, but bank-affiliated deals are slightly more likely to experience bankruptcy than stand-alone deals (7% versus 5%; the difference is marginally significant at the 10% level). The fact that loan outcomes for bank-affiliated deals are significantly worse than stand-alone deals is consistent with their worse ex-ante financing terms. Together, these results

²² Prior literature, for example, Kroszner and Rajan (1994) and Puri (1994), has examined ex-post performance to distinguish between banks' certification role versus conflicts of interest in the security underwriting context. The rationale for our analysis is similar to these papers.

clearly indicate that banks are not superior equity investors and their equity investments do not confer certification effects.

Turning to the comparison between parent-financed deals and stand-alone deals (differences reported in the last column), we find that the two samples have similar loan up/down-grade patterns whether it is peak or non-peak years. On the equity side, parent-financed deals seem to be more likely to exit through an IPO and less likely to go through a trade-sale, but these differences are concentrated in *non-peak* periods. Overall, the clear conclusion is that parent-financed deals do not exhibit better outcomes than stand-alone deals, especially among peak-year deals. This is at odds with the significantly better financing terms that parent-financed deals enjoy in peak years, and suggest that the better loan terms reflects banks' timing of credit supply conditions more than deal quality.

These results are robust when we use regression analysis (Table 8). For example, Panel A of the table shows that bank-affiliated deals are more (less) likely to experience loan downgrades (upgrades), especially for peak-year deals. Parent-financed deals have similar loan outcomes compared to stand-alone deals. Panel B shows that bank-affiliated deals are more likely to experience bankruptcy, especially in peak years. Parent-financed deals are more likely to have an IPO exit, but this effect is driven by non-peak years. Our estimation also shows that peak year investments are associated with significantly fewer IPO exits and more bankruptcies, consistent with the cyclical underperformance of private equity well-documented before (e.g., Kaplan and Stein (1993); Kaplan and Schoar (2005)).

[TABLES 7 & 8]

Juxtaposed with results in the previous two sub-sections, these outcome patterns provide further support to the negative views. The fact that bank-affiliated deals—especially peak-year deals—underperform stand-alone deals, is inconsistent with banks as superior equity investors. Indeed, it is more consistent with the concerns about volatility/growth maximization. The fact that parent-financed deals perform no better than stand-alone deals while enjoying superior financing terms in peak years is hard to reconcile with certification or reduced debt/equity conflicts. Instead, it points to an improvement in financing terms that is unrelated to deal quality, as measured by ex-post performance. Such an

unexplained improvement of financing terms is consistent with the notion that banks are able to time the credit market and take advantage of favorable credit supply conditions in the financing of in-house deals.²³

3.6 Share of the loan retained by the parent bank

In the final examination of time-varying patterns, we analyze parent banks' capital commitments to the deals they fund. As noted before, loans backing private equity transactions are syndicated, that is, arranged by banks but funded largely by other syndicate participants. Banks retain a fraction of the loans, off-loading capital requirements and credit risks to other investors. In this setting, asymmetric information can lead to a lemon's problem. Theory and empirical evidence indicate that a larger share retained by the bank should serve as a positive signal and should help resolve the asymmetric information problem (Jensen and Meckling (1976); Gorton and Pennacchi (1995); Gopalan et al. (2011)). In the case of parent financing, a larger share of the loan retained by the bank also aligns debt and equity interests, reducing agency conflicts (Jiang, et al. (2010)). We have shown in the previous section that parent-financed transactions enjoy better financing terms during credit market booms. For this to be consistent with either the certification hypothesis or the reduction of debt/equity conflicts, we would expect the portion retained by the parent bank to follow a pro-cyclical pattern. However, if these better terms come from banks' timing of the credit market and taking advantage of institutional investors' appetite for risky loans, then the portion retained could follow a counter-cyclical pattern. Indeed, this would be consistent with Shleifer and Vishny (2010), which predicts that banks are more likely to syndicate transactions during booms.

²³ We note that the contrast between bank-affiliated deals and parent-finance deals offer additional support for the positive views regarding parent-financing. Our results show that while bank-affiliated deals significantly underperform stand-alone deals, parent-financed deals do not. This means that the additional debt exposure improves on the equity-only exposure, which may result either from banks' certification role in the debt market (as opposed to as equity investors), or from better alignment of debt-equity interest (Jiang et al. 2010). Both are elements of the positive view. This again suggests that bank involvement in private equity is complex, and so is the policy implication. As we noted in the Introduction, a blunt separation of bank involvement may therefore not be first-best and result in loss of potentially value-enhancing certification and interest-alignment.

We use two proxies for the banks’ “skin in the game.” The first proxy, *PARENT BANK ALLOCATION* is the share of the total loan financed by the parent bank (the rest being syndicated to other banks or institutional investors). Since the actual value of this variable is available for only 19 transactions, we use estimated shares when the data are not available. The estimated share is the fitted value computed using coefficients from a regression of bank syndicate share on its syndicate role, the number of syndicate members, loan size, loan type, maturity, and year fixed effects using *all* U.S. transactions available in DealScan where the dependent variable is not missing. Our second proxy is the *total* share of the loan funded by banks, as opposed to non-bank institutions such as special purpose vehicles, hedge funds, and mutual funds. In the context of Shleifer and Vishny (2010), the total banks’ share—including the parent bank—should be counter-cyclical.

We regress these two proxies on market condition variables—the *PEAK YEAR* indicator and *CLO FUND FLOW*—in addition to a number of control variables and report the results in Table 9. The sample is limited to parent-financed deals. We find that both the estimated parent bank’s (individual) share, as well as all banks’ total share of the loans backing affiliated private equity transactions, are significantly lower during market peaks. The parent bank’s individual share is also significantly lower for highly priced deals, as measured by the ratio of enterprise value to EBITDA. These patterns are consistent with market timing and the notion that banks take advantage of their ability to raise more outside financing when market conditions are favorable, as suggested by Shleifer and Vishny (2010).

[TABLE 9]

Putting the findings of this section together, we find that bank-affiliated deals have worse financing terms and worse performance compared to stand-alone deals, especially among peak-year deals. Parent-financed deals enjoy superior financing terms, even though they do not exhibit superior performance. The financing advantage is concentrated in peaks of the credit market, when banks are *most* likely to lead the lending syndicate and yet retain the *least* portion of the loans. Collectively, we interpret these results as indicating that negative views—in particular, timing of credit market conditions—provide

more consistent explanations to banks' pro-cyclical expansion in private equity than are positive views based on banks' potential certification.

3.7 Robustness tests

One important concern is that our results could be driven by the endogenous nature of banks' decisions to lead loan syndicates for their affiliated transactions. If banks' decisions are driven by private information, the (unobserved) favorable deal characteristics could lead to superior financing terms. In fact, this type of selection is consistent with the certification hypothesis. Our findings in earlier sections provide counter-evidence for this on economic grounds: the results that banks' syndication decisions and the favorable financing terms are both highly cyclical while their retained portion is counter-cyclical are inconsistent with selection based on superior private information. Nevertheless, in this section we try to address this concern using identification techniques.

Our idea is to use private equity groups that spun out of banks as an identification instrument. A spin-off breaks the formal connection between the private equity firm and the bank, but does not affect the type of the transactions undertaken. Anecdotal evidence suggests that the spin-offs were primarily driven by compensation issues unrelated to the type of investments undertaken.²⁴ Therefore, it is reasonable to assume that the transactions undertaken by spun-off private equity firms before and after the firm became independent were essentially unchanged and the only true change is bank affiliation. Comparing financing terms of deals done before and after the spin-offs thus can inform us whether formally belonging to a bank and being close to a loan syndicate desk helps improve financing terms, keeping constant the (unobserved) deal types.

We look at transactions by the following eight spun-off private equity groups (the parent bank and the year of the spin-off are in parentheses): Mercury Capital (Merrill Lynch, 2000), Lightyear Capital

²⁴ Banks often received between 10% and 50% of the carried interest from affiliated groups prior to the spin-off, and a much smaller fraction (if any at all) afterwards (e.g., Hardyman, Lerner, and Leamon (2004)). Case study evidence and practitioners' accounts suggest that the spin-off process is not associated with a dramatic change in the strategy or structure for private equity groups, which typically remained focused on their given area of specialization.

(UBS, 2002), MidOcean Partners (Deutsche Bank, 2003), Diamond Castle (CSFB, 2004), Metalmark Capital (Morgan Stanley, 2004), Avista Capital (CSFB, 2005), CCMP Capital Advisors (JP Morgan, 2006), and Court Square Capital Partners (Citigroup, 2006).

Results are reported in the appendix and suggest that, after the spin-off, the financing terms deteriorate: the loan amount is smaller, loan maturity is shorter, and the spread is larger. Though statistically insignificant, the economic magnitude is large, and the deterioration in financing terms after the spin-off events is consistent with bank affiliation playing an important role. Overall, these findings qualitatively suggest that the organizational form of parent-financing per se appears related to better terms; alleviating the concern that the previously documented impact of the parent bank on the financing terms of in-house private equity deals is a result of selection biases.

We conduct a host of additional robustness checks. For example, we examined our results in the commercial-bank and investment-bank sub-samples, as well as in sub-samples after dropping the top one, two, and three bank-affiliated funds. We also examined the robustness of our results by coding the two peak periods 1998-2000 and 2005-2007 separately.²⁵ We also dropped financial sector deals, for which bank-affiliated funds may have an advantage. The results reported here are robust to these changes.

4. Inter-Temporal Cross-Selling

In this section, we examine whether banks' involvement in private equity transactions helps them cross-sell other banking services.²⁶ Cross-selling opportunities represent private benefits that accrue to the bank and provide an additional rationale for the bank to close an in-house deal. Since doing an extra deal is easier when credit-market conditions are favorable, this may help explain why we see more affiliated and parent-financed deals in such times.

²⁵ When examining the two peaks separately, we find that the results on bigger loan amounts and longer maturities are primarily driven by the second peak period. The effect on covenant terms (maximum debt/EBITDA) is driven by the earlier peak period. This may be the case as many deals are covenant-lite in the more recent credit boom.

²⁶ Drucker and Puri (2005) and Hellmann, et al. (2008) provide evidence of banks' cross-selling of lending services to investment banking and venture capital clients, respectively.

To examine inter-temporal cross-selling, we identify all public offerings of equity, private placements of equity, and M&A transactions conducted by the target firms in our sample *subsequent* to the original private equity transaction. This is done by collecting equity issuance and M&A data from the SDC database. Similarly, we identify subsequent loans from the Dealscan database. We then analyze whether the bank that was either (the parent of) the original private equity sponsor or the syndicate leader has higher odds of winning these future banking mandates.

Since we only observe the actual banks chosen, we create potential matches between banks and firms. For potential lenders, we use the top 15 banks that finance LBO transactions identified by Ivashina and Kovner (2011). For the underwriters and advisors, we use the top 15 investment banks over the sample period identified using SDC data. The dependent variable takes the value of 1 if a bank is chosen and 0 otherwise. The first key independent variable is *SPONSOR'S PARENT*, which takes the value of 1 if the bank is the parent bank of the equity sponsor in the original private equity transaction. The second key variable is *ORIGINAL LENDER*, which equals 1 if the bank led the loan syndicate of the original private equity transaction and 0 otherwise. These variables capture the bank's roles in the equity sponsorship and lending to the original private equity deal, respectively.

Table 10 shows that a bank's involvement in private equity transactions—especially its role as a lender—significantly increases its odds of winning future investment banking businesses from the target. For example, being a lender in a private equity deal increases the bank's odds of being chosen as a lender for subsequent loans by 60%, a very large magnitude economically. Lenders in private equity deals are also 17% and 9% more likely to be chosen as future M&A advisors and equity underwriters respectively by the target firm (reported as dF/dx in the table). These findings are consistent with prior evidence on banks' ability to cross-sell (or to provide “one-stop shopping” for) financial services.

[TABLE 10]

While cross-selling clearly makes private equity appealing to *banks*, it is unlikely to explain the better financing terms enjoyed by the parent-financed *deals*. While one can imagine a story where a bank would be willing to subsidize financing terms in order to facilitate deal closure and lock in the future fee

business, such an explanation is difficult to reconcile with the fact that the loans are primarily syndicated to institutional investors. In the syndicated market, financing terms are ultimately governed by the supply and demand of funds available for risky credits and are time-varying. Cross-selling does provide, however, banks with a rationale to expand their private equity activities when doing so is easy (i.e., at the peaks of the credit market): Even if these deals are of marginal quality, it is the investors that bear most of the risks; banks can potentially enjoy the private benefits of cross-selling. Thus, this section's evidence on banks' ability to cross-sell reinforces banks' timing of the credit market as the more consistent explanation for the various findings in this paper.

5. Conclusion

In the wake of the financial crisis, the complexity of banks and their involvement in risky activities such as private equity (as well as hedge funds and proprietary trading) has become a key policy concern. The Volcker Rule in the recently passed Dodd Frank Act calls for significant cutbacks in these activities. However, despite the important policy implications, virtually no prior evidence exists on the extent of banks' involvement in private equity, and the positive and negative effects of this involvement on the market and the economy. The empirical analysis in this paper takes a step towards filling this gap.

Banks have numerous reasons to be interested in private equity activities. Combining banking with private equity investing not only allows banks to cross-sell other services to target firms, but also creates potential information synergies between different divisions of the bank (the traditional banking departments and the private equity division) that can lead to profitable investments for banks.

From the policy standpoint, the key consideration is whether the positive *externalities* of banks' involvement in private equity out-weigh the negative ones. On the positive side, the information synergy arising from combining different activities can lead to a certification effect of banks' investments: Because banks have superior information on firms (due to past interactions and monitoring), a bank's decision to invest in a company certifies the quality of the deal to other investors. This should result in better financing terms, and ultimately be reflected in better investment outcomes. On the negative side, a

bank may take advantage of its superior information about firms as well as the market conditions to make decisions that benefit the bank at the expense of other investors. These pros and cons parallel the issues in the debate about the Glass-Steagall Act in an earlier era.

We empirically analyze whether the evidence is more supportive of the negative views or the positive ones. In addition to this main contribution, our analysis provides a first insight into the extent of banks' engagement in private equity, a little understood aspect of the private equity market. An important nuance is that there are two different ways for banks to be involved in private equity deals: as the equity investors (which we call bank-affiliated deals), or as both the equity investor *and* the debt financier (which we call parent-financed deals). The broad arguments about the positive (e.g., certification) and negative (e.g., agency problems and conflicts-of-interest) effects apply to both types of involvement, although the mechanisms and manifestations differ. We distinguish between the positive and negative views for both forms of involvement by examining the banks' investment decisions, the financing of the deals, the ex-post outcomes of the investments, and the banks' syndication patterns. We use stand-alone private equity deals as the benchmark in our analysis.

We find that banks are surprisingly large players in the private equity market, accounting for 30% of transactions between 1983 and 2009, with transaction values exceeding \$700 billion. This is remarkable given that there are only a dozen or so bank-affiliated groups but many times more stand-alone firms. The 30% figure is nearly identical to that documented separately by Lopez-de-Silanes, et al. (2011) using international data. This consistency suggests that bank involvement in private equity is a wide-spread and important phenomenon, if not a well understood one.

Our analyses of the various hypotheses indicate that the negative views seem most consistent with the weight of our evidence. Bank-affiliated deals have worse financing terms compared to stand-alone deals and, consistent with this, they also exhibit worse ex-post outcomes, especially if consummated during the peaks of the credit market. In contrast, parent-financed deals enjoy significantly better financing terms than stand-alone deals, even though they do not exhibit better ex post outcomes. Importantly, the financing advantage associated with parent financing is concentrated in the peaks of the

credit market when credit conditions are loose, but these are precisely the times when banks retain the lowest portion of the loans (hence risks) themselves. Thus, our interpretation is that the improvement in financing terms is better explained by banks' successful timing of the credit market in the financing of in-house deals, rather than better deal quality and incentive alignment.

We do find evidence that certification effects are associated with better financing terms. For instance, a strong target-bank relationship predicts better financing terms. But the parent-financing "advantage" remains unaffected after accounting for these effects. We also find that involvement in private equity generates cross-selling opportunities for banks. While cross-selling does not explain the financing patterns by itself, it does offer a rationale for banks' cyclical involvement in private equity.

Our view is that these results broadly support the concerns expressed by policy makers and voiced in the theoretical work of Shleifer and Vishny (2010), which predicts pro-cyclical risk taking by banks that exacerbates market cycles. We should also point out that, reflecting the complexity of the policy debate and the non-mutually exclusive nature of various hypotheses, we also find direct and indirect evidence for the positive views, even though on the whole the negative views appear more consistent with the collection of our empirical findings. Thus, any potential benefit brought about by the Volcker Rule would also be accompanied with losses of other value-enhancing effects. As ours is the first set of evidence regarding banks' activities in the private equity market, there is a need for considerable further research. We leave a more definitive assessment of the necessity and effectiveness of the Volcker Rule, as well as broader policy implications, to such research.

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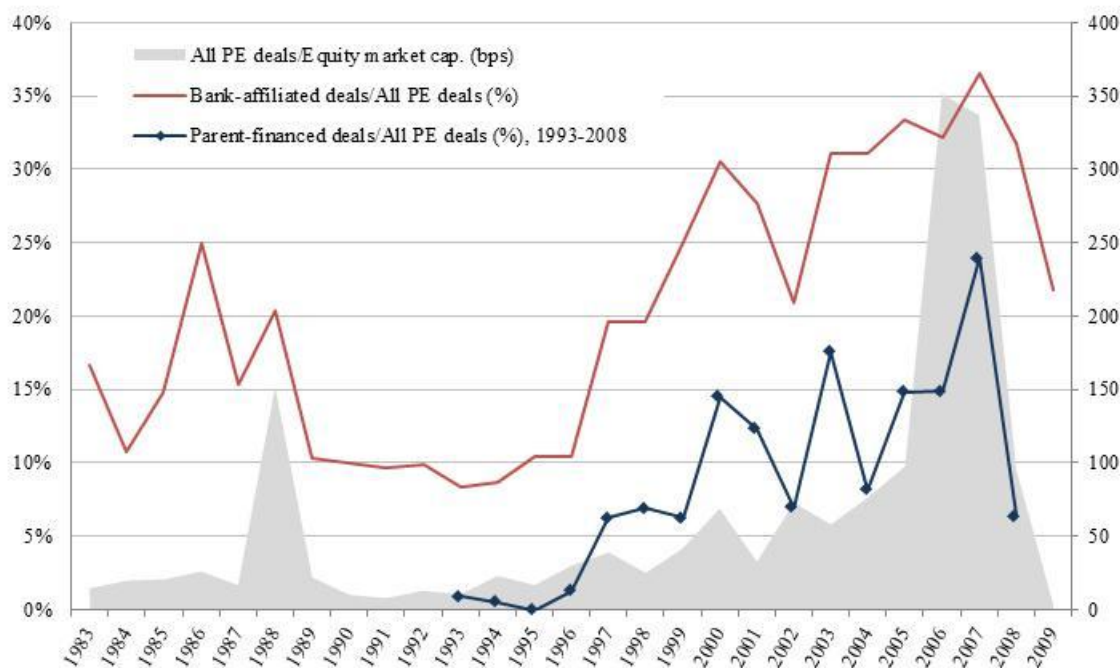
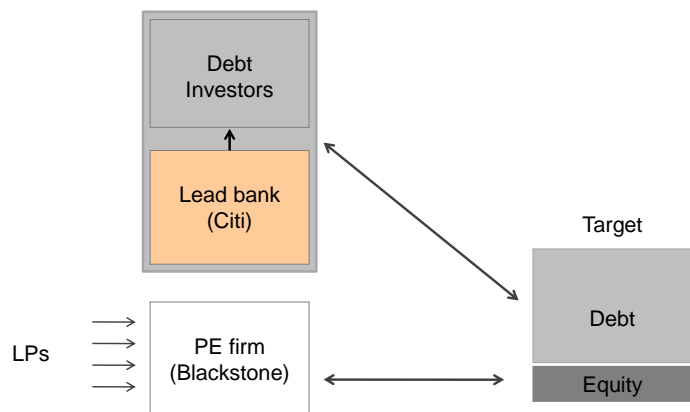


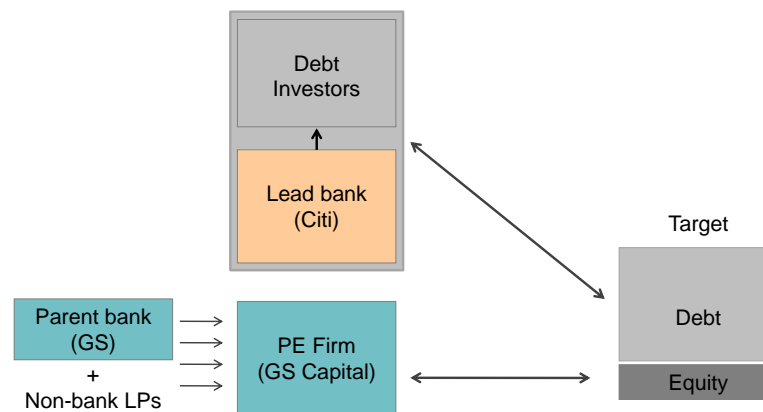
Figure 1
Private equity activity, 1983-2009

The figure plots the percentage of all private equity deals that are done by bank-affiliated private equity firms (left axis), the percentage of bank-affiliated deals that are financed by the parent bank (left axis), and all private equity deals as a fraction of total equity market capitalization (right axis, units in basis points). A bank-affiliated deal is a transaction where the equity sponsor is a bank-affiliated private equity firm. A parent-financed deal is a bank-affiliated deal where the parent bank also serves as either the lead arranger or co-arranger of the loan backing the deal. Private equity transaction information is from Capital IQ. Equity market capitalization corresponds to non-financial corporate business equity and is compiled from Flow of Funds Accounts.

Panel A: Stand-alone private equity deal



Panel B: Bank-affiliated private equity deal



Panel C: Parent-financed private equity deal

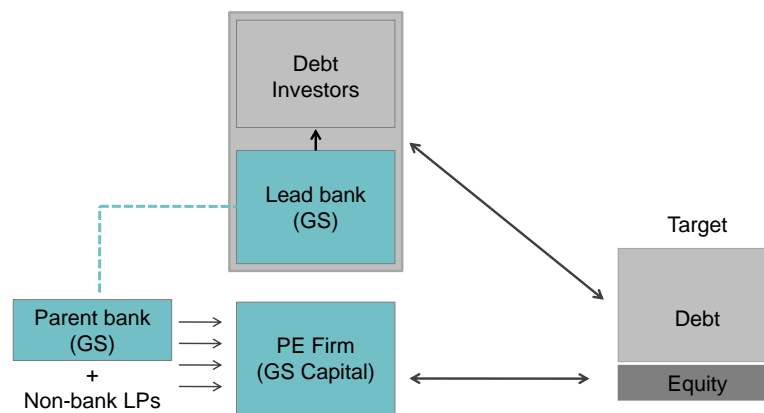


Figure 2
Bank involvement in private equity transactions

Table 1
League table of private equity activities

Bank-affiliated sample				Stand-alone sample (Top 15)		
Rank	Sponsor name	Total transactions value	Percent of total	Sponsor name	Total transactions value	Percent of total
1	Goldman Sachs Capital Partners	259,595.50	35.44%	KKR & Co	291,840.00	15.78%
2	Citigroup Private Equity	124,967.70	17.06%	TPG	253,524.80	13.71%
3	Lehman Brothers Merchant Banking	88,477.70	12.08%	Blackstone Group	222,870.70	12.05%
4	Merrill Lynch Capital Partners	84,210.65	11.50%	Bain Capital	139,631.50	7.55%
5	Deutsche Bank Capital Markets	45,711.64	6.24%	Carlyle Group	133,948.80	7.24%
6	JPMorgan Capital	28,428.82	3.88%	Thomas H Lee Trust	97,397.17	5.27%
7	Wachovia Partners	23,117.23	3.16%	Apollo Partners	90,544.53	4.90%
8	CSFB Private Equity	22,968.51	3.14%	Providence Equity Partners	75,746.80	4.10%
9	CCMP Capital Advisors	15,422.23	2.11%	Madison Dearborn Partners	65,030.27	3.52%
10	DLJ Merchant Banking	15,154.56	2.07%	Warburg Pincus LLC	52,167.19	2.82%
11	Macquarie Funds Management	12,082.77	1.65%	Silver Lake	34,511.41	1.87%
12	Bank of America	5,451.86	0.74%	Welsh Carson Anderson & Stowe	33,665.60	1.82%
13	Wasserstein & Co	4,651.38	0.63%	Clayton Dubilier & Rice Inc	31,518.00	1.70%
14	Morgan Stanley Private Equity	2,304.28	0.31%	Hillman & Freeman Co	30,172.36	1.63%
15	--	--	--	Oak Investment Partners	30,096.46	1.63%
Total		732,544.84	100.00%	Total (Whole Sample)	1,849,123.38	100.00%

This table ranks private equity firms by the total dollar amount of transactions they sponsored over the period 1983-2009. A bank-affiliated private equity firm is one that has a bank as its parent organization (e.g., Goldman Sachs Capital Partners). A stand-alone private equity firm in contrast does not have a parent organization (e.g., KKR & Co). There are a total of 14 bank-affiliated and 79 stand-alone private equity firms in our sample. For compactness, only the top 15 of the stand-alone funds are reported. Private equity transaction information is compiled from Capital IQ. Total transaction values are reported in millions of dollars.

Table 2
Transaction and target characteristics

	All (1)	Stand-alone (2)	Bank affiliated (3)	Parent financed (4)	Diff. (<i>t</i> -stat) (3) - (2)	Diff. (<i>t</i> -stat) (4) - (2)	
<u>Transaction characteristics:</u>							
Transaction size	1959.71 (4873.61)	1,351.82 (3,151.67)	2,024.72 (7,389.58)	7,804.09 (10,005.56)	1.11	10.37	***
Cash portion	0.83 (0.23)	0.82 (0.24)	0.84 (0.18)	0.85 (0.15)	0.57	1.43	
EV/Sales	2.31 (2.50)	2.27 (2.52)	2.07 (1.51)	2.66 (2.74)	0.49	0.82	
EV/EBITDA	1.40 (5.64)	1.33 (5.16)	0.54 (2.68)	3.64 (11.03)	-4.03	2.71	***
Equity/Ni	66.06 (190.81)	72.65 (213.84)	30.73 (35.80)	47.06 (53.87)	-2.24	-1.38	**
<u>Target characteristics:</u>							
Total assets	3,124.73 (7,190.26)	2,661.02 (6,854.73)	2,481.16 (4,755.23)	6,744.77 (9,806.40)	-0.20	4.26	***
Sales	1,538.02 (7,453.46)	1,248.43 (6,158.30)	2,074.24 (12,639.35)	2,971.23 (5,551.68)	1.49	3.23	***
Debt/Assets	0.39 (0.31)	0.40 (0.31)	0.39 (0.31)	0.30 (0.25)	0.37	-3.05	***
Debt/EBITDA	3.48 (6.19)	3.44 (6.36)	3.56 (4.31)	3.68 (6.64)	0.18	0.27	
Cash/Assets	0.09 (0.13)	0.09 (0.14)	0.09 (0.11)	0.06 (0.09)	-0.32	-2.33	**
EBITDA/Assets	0.15 (0.14)	0.15 (0.15)	0.14 (0.07)	0.15 (0.08)	-1.03	-0.23	
EBITDA/Net assets	0.18 (0.65)	0.19 (0.74)	0.15 (0.10)	0.16 (0.10)	-0.92	-0.76	
EBITDA/Sales	0.03 (0.09)	0.03 (0.09)	0.01 (0.05)	0.04 (0.09)	-5.01	1.22	***
NI/Sales	0.08 (0.12)	0.09 (0.12)	0.10 (0.14)	0.06 (0.04)	-0.37	-1.98	**
<u>Financing statistics:</u>							
Loan amount	612.73 (1,603.14)	489.01 (1,104.02)	534.58 (2,029.48)	1924.01 (3,233.87)	0.58	12.30	***
Loan maturity	6.16 (8.77)	5.78 (2.13)	5.50 (2.23)	11.03 (29.55)	-2.17	6.97	***
Loan spread	317.94 (147.61)	316.14 (146.77)	335.76 (152.83)	300.50 (142.85)	2.20	-1.33	**
Max Debt/EBITDA ratio	5.80 (2.11)	5.66 (1.99)	5.82 (1.87)	6.80 (2.83)	0.51	3.82	***

This table compares targets and transaction characteristics for parent-financed deals versus all other deals. The data were compiled from Capital IQ. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 3
Determinants of bank affiliation and parent financing

<i>Panel A: Baseline</i>									
	Bank affiliated		Parent financed			Bank affiliated		Parent financed	
	Coeff.	z-stat	Coeff.	z-stat		Coeff.	z-stat	Coeff.	z-stat
Peak year	-0.09	-0.72	0.45	2.29	**	--	--	--	--
CLO fund flow	--	--	--	--		1.26	0.34	12.53	2.61 ***
Number of investors	-0.13	-0.81	0.28	2.03	**	-0.16	-0.95	0.23	1.56
Investment grade	-0.92	-1.50	-1.01	-1.31		-0.52	-0.69	-1.15	-1.04
Log(Transaction value)	-0.01	-0.08	0.35	3.48	***	0.00	0.03	0.29	3.01 ***
EV/EBITDA	-0.01	-0.28	0.02	0.95		0.01	0.44	0.03	1.53
Log(Target assets)	-0.05	-1.71 *	0.02	0.48		-0.07	-2.07 **	-0.01	-0.17
EBITDA/Sales	0.01	0.01	-1.90	-1.01		0.79	0.46	-0.90	-0.46
No financial data	-0.44	-0.67	-0.31	-0.53		-0.10	-0.14	-0.29	-0.43
Fixed effects:									
Industry	Yes		Yes			Yes		Yes	
Observations	2,105		2,105			1,320		1,320	
Pseudo R-squared	0.07		0.07			0.06		0.06	

<i>Panel B: Including target-bank relationship</i>									
	Bank affiliated		Parent financed			Bank affiliated		Parent financed	
	Coeff.	z-stat	Coeff.	z-stat		Coeff.	z-stat	Coeff.	z-stat
Peak year	-0.13	-0.86	0.52	2.25	**	--	--	--	--
CLO fund flow	--	--	--	--		2.77	0.66	9.10	1.58
Target-bank relationship	-0.07	-0.32	0.23	0.64		0.14	0.37	-0.53	-0.96
Peak year*Target-bank relat.	0.16	0.49	-0.26	-0.58		--	--	--	--
CLO fund flow*Target-bank relat.	--	--	--	--		-6.45	-0.72	11.92	1.06
Number of investors	-0.13	-0.83	0.29	2.06	**	-0.16	-0.92	0.22	1.50
Investment grade	-0.92	-1.50	-1.01	-1.29		-0.52	-0.68	-1.18	-1.08
Log(Transaction value)	-0.01	-0.10	0.35	3.50	***	0.01	0.08	0.29	2.92 ***
EV/EBITDA	-0.01	-0.29	0.02	0.96		0.01	0.46	0.03	1.57
Log(Target assets)	-0.05	-1.69 *	0.01	0.42		-0.07	-1.97 **	-0.01	-0.17
EBITDA/Sales	0.02	0.01	-1.92	-1.02		0.81	0.47	-0.99	-0.51
No financial data	-0.45	-0.68	-0.30	-0.52		-0.06	-0.08	-0.35	-0.52
Fixed effects:									
Industry	Yes		Yes			Yes		Yes	
Observations	2,105		2,105			1,320		1,320	
Pseudo R-squared	0.07		0.07			0.07		0.07	

This table examines the determinants of bank-affiliated and parent-financed private equity investments relative to stand-alone deals. We estimate multinomial logit regressions, with the stand-alone deals being the omitted category. Transaction and target information from Capital IQ is merged with loan data from DealScan for the 1993-2008 period. Each observation in the sample corresponds to a different transaction. *PEAK YEAR* is equal to 1 for 1998-2000, 2005-2007 years and 0 otherwise. *CLO FUND FLOW* is the lagged flow of money to CLOs as reported by Standard & Poor's LCD Quarterly Review, scaled by total term loan issuance; high values for this variable indicate a positive shock to the credit supply from institutional investors. CLO fund flow data are available from 2001 to 2008 on a quarterly basis. *TARGET-BANK RELATIONSHIP*—the focus of the results reported in Panel B—is the dollar value of loans in the previous five years arranged by the same lead bank for the target divided by the total dollar value of all loans received by the target firm. *NUMBER OF INVESTORS* is the count of equity investors in the transaction (club deals involve multiple investors). *INVESTMENT GRADE* is a dummy equal to 1 if the borrower's rating is BBB or higher and 0 otherwise. *NO FINANCIAL DATA* is a dummy equal to 1 if target or transaction data are incomplete. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 4
Financing terms, 1993-2008

	Loan amount		Loan maturity		Loan spread		Max Debt/EBITDA	
	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat
Bank affiliated	-130.84	-1.52	-1.40	-2.50 **	15.91	1.84 *	0.21	0.65
Parent financed	577.24	4.41 ***	3.90	4.58 ***	-33.70	-2.56 **	0.50	1.28
Mixed type deal	1,298.52	8.31 ***	6.39	6.29 ***	-5.61	-0.36	0.14	0.31
Investment grade	217.20	1.04	-1.81	-1.33	-50.22	-2.38 **	-1.60	-1.86 *
Log(Transaction value)	215.52	10.89 ***	-0.02	-0.16	-10.08	-5.07 ***	0.22	3.29 ***
EV/EBITDA	6.53	0.89	-0.06	-1.35	-0.21	-0.29	0.02	0.95
Log(Target assets)	143.40	12.48 ***	0.31	4.21 ***	-9.57	-8.28 ***	0.01	0.2
EBITDA/Sales	1,772.75	3.74 ***	-0.49	-0.16	13.98	0.29	1.22	1.11
No financial data	855.27	4.72 ***	1.44	1.22	-37.63	-2.06 **	0.41	1.01
Fixed effects:								
Industry	Yes		Yes		Yes		Yes	
Year	Yes		Yes		Yes		Yes	
Observations	2,105		2,105		2,105		536	
<i>R</i> -squared	0.33		0.05		0.20		0.21	

This table examines financing terms—loan amount, maturity, spread paid over LIBOR, and maximum debt to EBITDA ratio—on the loans backing the private equity transactions. Transaction and target information from Capital IQ is merged with loan data from DealScan for the 1993-2008 period. Each observation in the sample corresponds to a different transaction. *BANK AFFILIATED* is equal to 1 if the deal is backed by a private equity firm affiliated with a bank and 0 otherwise. *PARENT FINANCED* is equal to 1 if the parent bank of the private equity sponsor is the lead bank of the lending syndicate and 0 otherwise. We only count lenders who participate in the first and second tier of the lending syndicate. Stand-alone private equity deals constitute the omitted category in the analysis. *MIXED TYPE DEAL* is a dummy equal to 1 if the deal is backed by at least one bank-affiliated firm and one stand-alone firm. *INVESTMENT GRADE* is a dummy equal to 1 if the borrower's rating is BBB or higher and 0 otherwise. Target and transaction data were compiled from Capital IQ. *NO FINANCIAL DATA* is a dummy equal to 1 if target or transaction data are incomplete. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 5
Certification channels

	Loan amount		Loan maturity		Loan spread		Max Debt/EBITDA					
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat				
	<i>Panel A: Target-bank relationship</i>											
Bank affiliated	-139.91	-1.63		-1.47	-2.65	***	17.61	2.06	**	0.18	0.54	
Parent financed	707.7	4.76	***	6.48	6.75	***	-43.38	-2.93	***	0.25	0.56	
Target-bank relationship	193.11	2.47	**	-0.03	-0.05		-50.81	-6.52	***	0.3	1.46	
Parent financed*Target-bank relationship	-461.02	-1.84	*	-9.22	-5.68	***	33.17	1.32		0.99	1.62	
Other controls	Same as in Table V, not reported for compactness											
	<i>Panel B: Bank reputation in the LBO financing market:</i>											
Bank affiliated	-92.25	-0.98		-1.33	-2.18	**	17.11	1.81	*	0.04	0.10	
Parent financed	482.19	3.35	***	4.83	5.16	***	-31.62	-2.18	**	0.90	2.07	**
Reputation: LBO market	-184.20	-1.02		-0.23	-0.20		-5.34	-0.29		0.68	1.05	
Parent financed*Reputation	525.68	1.58		-6.02	-2.78	***	-15.75	-0.47		-2.07	-2.21	**
Other controls	Same as in Table V, not reported for compactness											

This table examines whether two channels of certification by banks in the lending market—bank information and bank reputation—can explain the superior terms enjoyed by parent-financed deals (the effect documented in Table V). Specifications used in Table V are extended to include proxies for these certification channels. Bank information is measured by *TARGET-BANK RELATIONSHIP*, which is the percentage of the target firm's borrowing in the last five years that come from the bank. Bank reputation in the LBO lending market is measured by a dummy variable that equals 1 if the bank is one of the top five LBO lenders identified by Shivdasani and Wang (2011). ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 6
Cyclicalities in financing terms

Panel A: Peak years

Dependent variable:	Loan amount		Loan maturity		Loan spread		Max Debt/EBITDA				
	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat			
Bank affiliated	0.16	0.00	-0.29	-0.37	7.81	0.61	0.22	0.51			
Parent financed	16.74	0.08	0.56	0.40	-15.01	-0.64	-0.11	-0.2			
Peak year	191.90	2.56	**	0.68	1.43	39.89	5.00	***	0.48	2.05	**
Bank affiliated*Peak year	-70.49	-0.42		-1.67	-1.58	14.68	0.82		-0.31	-0.50	
Parent financed*Peak year	763.62	2.76	***	4.85	2.77	***	-15.56	-0.53	1.82	2.36	**
Target-bank relationship	73.61	0.66		-0.28	-0.4	-6.19	-0.53		0.12	0.45	
Target-bank relationship*Peak year	59.42	0.40		-1.37	-1.46	-44.69	-2.84	***	0.77	2.03	**
Mixed type deal	-23.72	-0.07		0.65	0.30	66.93	1.87	*	0.33	0.48	
Mixed type deal*Peak year	1,775.72	4.67	***	7.53	3.12	***	-56.10	-1.39		0.22	0.25
Investment grade	231.24	1.09		-1.93	-1.43	-61.13	-2.71	***	-1.01	-1.15	
Log(Transaction value)	207.00	10.29	***	-0.002	-0.01	-10.44	-4.88	***	0.23	3.59	***
EV/EBITDA	1.41	0.19		-0.08	-1.63	-0.57	-0.72		0.02	1.24	
Log(Target assets)	139.35	11.84	***	0.34	4.54	***	-7.90	-6.31	***	0.01	0.47
EBITDA/Sales	1,746.16	3.63	***	-0.23	-0.08	-9.15	-0.18		0.86	0.77	
No financial data	767.64	4.17	***	1.60	1.37	-46.84	-2.39	**	0.40	0.96	
Fixed effects:											
Industry	Yes			Yes		Yes			Yes		
Observations	2,105			2,105		2,105			536		
R-squared	0.30			0.06		0.07			0.18		

Table 6-continued

Panel B: CLO fund flow

Dependent variable:	Loan amount		Loan maturity		Loan spread		Max Debt/EBITDA					
	Coeff.	<i>t</i> -stat		Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat			
Bank affiliated	530.22	2.08	**	-0.09	-0.06	23.10	0.95	2.06	2.79	***		
Parent financed	-200.50	-0.5		0.12	0.05	-49.71	-1.30	-1.67	-1.87	*		
CLO fund flow	9,815.32	3.55	***	26.16	1.48	-181.32	-0.68	28.87	3.63	***		
Bank affiliated*CLO fund flow	-17,032.44	-2.78	***	-41.99	-1.07	-126.88	-0.22	-57.29	-2.52	**		
Parent financed*CLO fund flow	22,164.21	2.5	**	107.66	1.90	*	138.50	0.16	45.15	1.68	*	
Target-bank relationship	362.38	1.74	*	0.52	0.39		-47.33	-2.37	**	-0.08	-0.20	
Target-bank relat.*CLO fund flow	-6,618.37	-1.3		-69.22	-2.13	**	-426.32	-0.88	16.12	1.34		
Mixed type deal	1,194.02	2.63	***	-0.24	-0.08		-10.71	-0.25	-0.26	-0.30		
Mixed type deal*CLO fund flow	2,054.09	0.21		163.59	2.59	***	403.77	0.43	22.73	0.94		
Investment grade	844.30	2.29	**	-2.31	-0.98		-97.98	-2.78	***	-2.77	-2.45	**
Log(Transaction value)	241.85	8.48	***	0.02	0.11		-11.99	-4.38	***	0.26	3.29	***
EV/EBITDA	16.50	1.25		-0.07	-0.85		0.72	0.56		0.09	2.09	**
Log(Target assets)	184.01	10.33	***	0.48	4.20	***	-9.71	-5.68	***	0.06	1.86	*
EBITDA/Sales	2,608.97	3.43	***	-1.45	-0.30		0.74	0.01		1.00	0.49	
No financial data	1,353.11	4.61	***	3.41	1.81	*	-41.59	-1.48		1.19	1.72	*
Fixed effects:												
Industry	Yes			Yes			Yes			Yes		
Observations	1,320			1,320			1,320			320		
R-squared	0.31			0.07			0.10			0.25		

This table re-examines financing terms—loan amount, maturity, spread paid over LIBOR, and maximum debt to EBITDA ratio—on the loans backing the private equity transactions, focusing on cyclicalities. The sample and variables definitions are identical to Table V. In Panel A, the focus is on the interaction terms with the *PEAK YEAR* dummy. *PEAK YEAR* is equal to 1 for 1998-2000, 2005-2007 years and 0 otherwise. In Panel B, the focus is on the interaction terms with the *CLO FUND FLOW*. *CLO FUND FLOW* is the lagged flow of money to CLOs as reported by Standard & Poor's LCD Quarterly Review. We use CLO fund flow scaled by total term loan issuance; high values for this variable indicate bullish institutional sentiment. CLO fund flow data are available from 2001 to 2008 on a quarterly basis. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 7
Loan outcomes and equity exits: Univariate analysis

	Stand-alone	Bank affiliated	Parent financed	Diff. (<i>t</i> -stat)	Diff. (<i>t</i> -stat)
	(1)	(2)	(3)	(2) - (1)	(3) - (1)
<u>All years:</u>					
Debt: Upgrade	0.34	0.23	0.35	-3.27 ***	0.09
Debt: Downgrade	0.48	0.61	0.50	3.41 ***	0.44
Exit: IPO	0.13	0.12	0.46	-0.37	2.31 **
Exit: Trade sale	0.72	0.74	0.38	1.25	-2.39 **
Exit: Bankruptcy	0.05	0.07	0.15	1.74 *	0.94
Holding Period	47.10	45.20	18.08	-1.15	-6.26 ***
<u>Peak years:</u>					
Debt: Upgrade	0.33	0.18	0.34	-3.19 ***	0.17
Debt: Downgrade	0.49	0.66	0.50	3.46 ***	0.35
Exit: IPO	0.09	0.12	0.25	1.66 *	0.94
Exit: Trade sale	0.78	0.74	0.50	1.36	-1.46
Exit: Bankruptcy	0.06	0.08	0.25	1.38	1.15
Holding Period	47.90	46.50	20.00	-0.59	-3.98 ***
<u>Non-peak years:</u>					
Debt: Upgrade	0.35	0.29	0.36	-1.31	0.12
Debt: Downgrade	0.48	0.55	0.49	1.23	0.23
Exit: IPO	0.15	0.12	0.80	-1.50	3.23 ***
Exit: Trade sale	0.68	0.75	0.20	2.37	-2.40 **
Exit: Bankruptcy	0.05	0.06	0.00	0.67	-3.08 ***
Holding Period	46.40	43.10	14.10	1.48	-26.73 ***

This table examines the performance of the loans backing the private equity deals and the exits of the equity investments in our sample. For the performance of the loans, we focus on upgrades and downgrades of the credit ratings subsequent to consummation of the private equity transaction. For equity exits, we examine IPO, trade sale, and bankruptcies. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 8
Loan outcomes and equity exits: Regressions

Panel A: Loan

	Loan upgrade				Loan downgrade			
	dF/dx	z-stat			dF/dx	z-stat		
Bank affiliated	-0.11	-2.77	***		-0.07	-1.25		
Parent financed	-0.01	-0.19			0.03	0.50		
Peak year	--				-0.01	-0.28		
Bank affiliated*Peak year	--			**	-0.15	-2.13		***
Parent financed*Peak year	--				-0.09	-1.28		*
Control variables	Yes				Yes			
Fixed effects: Industry/Year	Yes/Yes			Yes/No	Yes/Yes			Yes/No
Observations	1,919			1,919	1,919			1,919

Panel B: Equity

	Exit: IPO				Exit: Trade sale				Exit: Bankruptcy			
	dF/dx	z-stat			dF/dx	z-stat			dF/dx	z-stat		
Bank affiliated	0.04	2.45	**		-0.03	-1.38			-0.05	-2.10	**	
Parent financed	0.15	1.62			0.57	2.54			-0.34	-1.42		
Peak year	--				-0.08	-0.65			0.06	3.14	***	
Bank affiliated*Peak year	--			***	--				-0.11	-2.24	**	
Parent financed*Peak year	--			**	-0.05	-3.39			--			**
Control variables	Yes				0.11	2.62			--			
Fixed effects: Industry/Year	Yes/Yes			Yes/No	-0.12	-2.04			0.22	1.43		
Observations	1,952			1,952	Yes			Yes	Yes			Yes
					Yes/No			Yes/No	Yes/Yes			Yes/No
					1,952			1,952	1,952			1,952

This table reports results of probit regressions of loan outcomes. We focus on loan upgrades and downgrades of the credit ratings subsequent to consummation of the private equity transaction. In Panel A, the dependent variables, *Loan upgrade* (*Loan downgrade*), is a dummy equal 1 if the credit rating of the loan backing the private equity transaction is upgraded (downgraded) following the deal closure, and 0 otherwise. In Panel B, the dependent variable is dummy equal 1 if an investment experienced the corresponding type of exit and 0 otherwise. Each regression includes a set of standard control variables used throughout the paper (not reported). ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 9
Cyclicalities of bank loan share

Dependent variable:	Parent bank loan share					Overall bank allocation						
	Coeff.	<i>t</i> -stat		Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat		Coeff.	<i>t</i> -stat		
Peak year	-2.58	-3.79	***	--	--	-0.06	-2.60	**	--	--		
CLO fund flow	--	--		-9.74	-2.12	**	--	--	-0.23	-1.49		
Investment grade	3.81	1.31		-0.08	-0.03		0.15	1.60	-0.17	-1.91	*	
Log(Transaction value)	0.1	0.26		0.00	0.02		0.01	0.45	0.01	1.4		
EV/EBITDA	-0.19	-5.02	***	-0.19	-8.21	***	0.01	4.45	***	0.00	6.33	***
Log(Target assets)	-0.19	-1.94	*	-0.08	-1.21		0.00	1.15		0.01	3.84	***
EBITDA/Sales	9.47	1.43		4.27	0.99		0.59	2.66	***	0.28	1.9	*
No financial data	-0.74	-0.34		-0.16	-0.12		0.19	2.65	***	0.22	4.99	***
Fixed effects:												
Industry	Yes			Yes			Yes			Yes		
Observations	171			137			171			137		
<i>R</i> -squared	0.36			0.55			0.20			0.44		

This table analyzes the cyclicalities of bank share of loan financing backing bank-affiliated private equity transactions. The sample includes parent-financed transactions. (The number of observations is also reduced due to the unavailability of the dependent variable.) *PARENT BANK LOAN SHARE* is the fraction of the loan financed by the parent bank. We use predicted share when the actual data are not available. Predicted share is computed based on the lender's syndicate role, number of syndicate members, loan size, type, maturity and year using *all* DealScan U.S. data where bank syndicate share is not missing. *OVERALL BANK ALLOCATION* is share of the loan funded by banks, as opposed to non-bank institutions. *PEAK YEAR* is a dummy equal to 1 for 1998-2000, and 2005-2007 and 0 otherwise. *CLO FUND FLOW* is flow of money to CLOs as reported by Standard & Poor's LCD Quarterly Review, scaled by total term loan issuance. We lag this variable by one quarter. Each observation in the sample corresponds to a different transaction; other variable definitions are the same as in Table V. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 10
Cross-selling of other banking services to the target

	Full sample				Excluding commercial banks				Excluding Goldman Sachs			
	Coeff.	dF/dx	z-stat		Coeff.	dF/dx	z-stat		Coeff.	dF/dx	z-stat	
<i>Panel A: Future lender choice</i>												
Bank is PE sponsor’s parent	0.0751	0.0131	0.83		0.4602	0.1038	3.13	***	-0.0293	-0.0048	-0.28	
Bank was the original lender	1.8441	0.5995	29.71	***	1.7206	0.5629	20.83	***	1.7741	0.5772	24.2	***
Fixed effects:												
Bank/ Industry/ Year	Yes/ Yes/ Yes				Yes/ Yes/ Yes				Yes/ Yes/ Yes			
Observations	34,162				30,093				32,840			
Pseudo R^2 (%)	0.10				0.09				0.09			
<i>Panel B: Future M&A advisor choice</i>												
Bank is PE sponsor’s parent	0.4276	0.0512	3.01	***	0.5417	0.0845	3.31	***	0.2807	0.0311	1.21	
Bank was the original lender	0.9520	0.1650	12.82	***	1.2246	0.2818	13.82	***	0.8758	0.1497	9.29	***
Fixed effects:												
Bank/ Industry/ Year	Yes/ Yes/ Yes				Yes/ Yes/ Yes				Yes/ Yes/ Yes			
Observations	23,775				15,447				17,832			
Pseudo R^2 (%)	0.02				0.03				0.01			
<i>Panel C: Future underwriter choice</i>												
Bank is PE sponsor’s parent	0.9111	0.1568	7.54	***	0.9176	0.1587	6.74	***	0.6840	0.1044	4.02	***
Bank was the original lender	0.6573	0.0943	6.23	***	0.6961	0.1028	6.10	***	0.4632	0.0597	3.25	***
Fixed effects:												
Bank/ Industry/ Year	Yes/ Yes/ Yes				Yes/ Yes/ Yes				Yes/ Yes/ Yes			
Observations	20,600				17,775				14,784			
Pseudo R^2 (%)	0.01				0.01				0.01			

This table examines banks' ability to cross-sell other banking services—additional lending, M&A advisory, and equity underwriting—to the target firms of the private equity transactions (following the original buyout). The empirical model is a conditional logit. The column dF/dx reports conditional probabilities. Each observation is a pairing of the target firm in the private equity transaction with a set of potential banks. The dependent variable is a dummy equal to 1 for the banks chosen for the transaction and 0 otherwise. *BANK IS PE SPONSOR'S PARENT* (short *SPONSOR'S PARENT*) is a dummy equal to 1 if the bank was the parent of the private equity sponsor of the original PE transaction and 0 otherwise. *BANK WAS THE ORIGINAL LENDER* (short *ORIGINAL LENDER*) is a dummy equal to 1 if the bank led the loan syndicate of the original private equity transaction and 0 otherwise. In the conditional logit model, deal characteristics are not required; however, we include lender fixed effects to account for the fact that some lenders do more deals than others. The analysis also includes industry and year fixed effects. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Appendix

Table A1
Bank-affiliated private equity spin-offs

Dependent variable:	Loan amount		Loan maturity		Loan spread				
	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat			
Parent financed	204.46	0.95	2.14	1.83	*	-17.85	-1.09		
After spin-off	-349.04	-0.99	-0.85	-0.45		44.17	1.64		
Parent financed*After spin-off	-155.19	-0.25	-0.7	-0.21		-19.28	-0.41		
Mixed type deal	988.35	3.09	***	4.31	2.49	**	11.58	0.48	
Investment grade	781.48	0.93		-1.58	-0.35		-99.77	-1.55	
Log(Transaction value)	525.31	5.47	***	-0.4	-0.77		-15.68	-2.14	**
EV/EBITDA	-7.08	-0.26		-0.03	-0.21		0.35	0.17	
Log(Target assets)	182.33	5.18	***	0.41	2.17	**	-12.3	-4.59	***
EBITDA/Sales	12,836.51	5.51	***	-1.19	-0.09		190.76	1.07	
No financial data	2,918.11	3.46	***	3.21	0.7		-69.27	-1.08	
Fixed effects:									
Industry	Yes		Yes		Yes				
Year	Yes		Yes		Yes				
Observations	445		445		445				
R-squared	0.49		0.06		0.25				

This table examines financing terms—loan amount, loan maturity, and loan-spread—for the private equity transactions done by firms that were spun-off from a bank holding company. We have insufficient data to analyze debt covenant (Maximum Debt to EBITDA ratio) in this sample. The dummy variable *AFTER SPIN-OFF* is equal to 1 in the years following private equity firm separation from the bank holding company. The interaction term, *PARENT FINANCED*AFTER SPIN-OFF*, captures the incremental effect of the spin-off on having the parent bank on the lending syndicate. Other variable definitions are identical to Table V. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.